ABSTRACT OF THE DISCLOSURE

A linearly polarized light projector system projects linearly polarized light onto a subject. While polarizing filters are used for removing light specular-reflected on the

5 subject, a reflected image after removal of the specular-reflected light is captured by image input systems different in view point. Even in the case where the subject is glossy, the number of points for measuring the shape of the subject is increased and range images improved in measurement

10 accuracy can be acquired collectively.

[FIG. 1]

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 21

FIRST IMAGE INPUT SYSTEM 22

SECOND IMAGE INPUT SYSTEM 23

POLARIZING FILTER 24

POLARIZING FILTER 25

SUBJECT 26

[FIG. 3]

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 21

IMAGE INPUT SYSTEM A: VIEW POINT A

IMAGE INPUT SYSTEM B: VIEW POINT B

IMAGE INPUT SYSTEM C: VIEW POINT C

[FIG. 4]

FIRST IMAGE INPUT SYSTEM 22

SECOND IMAGE INPUT SYSTEM 23

POLARIZING FILTER 24

POLARIZING FILTER 25

SUBJECT 26

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 31

POLARIZING FILTER 32

[FIG. 6]

RELATIVE-SPECULAR GLOSSINESS

GYPSUM 2, PAPER 3

METAL SATIN FINISH

(VARIOUS KINDS OF INDUSTRIAL PARTS)

COATING SATIN (PJ, NOTEBOOK PC, CELLULAR PHONE, ETC.)

COATING MATTE

(TOYS, VARIOUS KINDS OF INDUSTRIAL PARTS, ETC.)

METAL HAIR-LINE FINISH

(VARIOUS KINDS OF INDUSTRIAL PARTS)

SMOOTH METAL SURFACE, MIRROR

[FIG. 7]

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 41

IDENTICAL PRINCIPAL POINT CAMERA 42

NONIDENTICAL PRINCIPAL POINT CAMERA 43

HALF MIRROR 44

POLARIZING FILTER 45

[FIG. 8]

NONIDENTICAL PRINCIPAL POINT CAMERA 1

NONIDENTICAL PRINCIPAL POINT CAMERA 2

[FIG. 9]

IDENTICAL PRINCIPAL POINT CAMERA 42

NONIDENTICAL PRINCIPAL POINT CAMERA 43

HALF MIRROR 44

POLARIZING FILTER 45

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 51

POLARIZING FILTER 52

[FIG. 10]

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 60

LINEARLY POLARIZED LIGHT PROJECTOR SYSTEM 61

CAMERA 62

POLARIZING FILTER 63

[FIG. 11]

PROJECTOR SYSTEM 11

SUBJECT 12

FIRST IMAGE INPUT SYSTEM 13

SECOND IMAGE INPUT SYSTEM 14

[FIG. 12]

IMAGE INPUT SYSTEM A: VIEW POINT A

IMAGE INPUT SYSTEM B: VIEW POINT B

IMAGE INPUT SYSTEM C: VIEW POINT C

[FIG. 13]

IMAGE INPUT SYSTEM A: VIEW POINT A

IMAGE INPUT SYSTEM B: VIEW POINT B

IMAGE INPUT SYSTEM C: VIEW POINT C

[FIG. 14]

PROJECTOR SYSTEM 11

SUBJECT 12

IMAGE INPUT SYSTEM 15

[FIG. 15]

PROJECTOR SYSTEM 11

SUBJECT 12

NONIDENTICAL PRINCIPAL POINT IMAGE INPUT SYSTEM 15

IDENTICAL PRINCIPAL POINT IMAGE INPUT SYSTEM 16

HALF MIRROR 17